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EXAMINER

MILLER, PATRICK L

ART UNIT

PAPER NUMBER

2837

DATE MAILED: 12/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/995,206

Applicant(s)

HILL ET AL.

Examiner

Patrick Miller

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 13-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7, 8 and 13-17 is/are rejected.
- 7) ☒ Claim(s) 3, 5 and 6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.

- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 2, 3, 13-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
  - Claim 2 recites “a start-up sequence”. This term is already cited in claim 1. It is unclear, in claim 2, if the applicant is referring to the same “start-up sequence”. Please clarify.
  - Claim 13 does not make clear what the spindle controller is measuring.
  - Claim 16 recites “a predetermined threshold”. A similar term is cited in claim 13 (a threshold value). It is unclear, in claim 16, if the applicant is referring to the same term. Please clarify.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

- (e) the invention was described in-
- (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
  - (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

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2. Claims 1, 2, 7, and 13-17 are rejected under 35 U.S.C. 102(e) as being anticipated by

Kardash (6,124,689).

- With respect to claim 1, Kardash discloses a method for controlling the power of a motor, comprising the steps of: applying power to a spindle motor to engage a start-up sequence, where start-up *is not limited* to starting from rest (Col. 2, lines 57-62; Col. 5, lines 36-39) [NOTE: Column 7, lines 34-36 implies that power has been applied for a start-up sequence prior to the On/Off sequencing], monitoring the amount of current or voltage applied to the spindle motor (Col. 5, lines 52-67), obtaining a control voltage proportional to applied current/voltage (Fig. 4, output of #40 to #48), and removing power if the control voltage exceeds a predetermined voltage threshold (power is selectively removed from motor windings) (Col. 2, lines 47-54).
- With respect to claim 2, power is applied for a start-up (restart from non-stationary rotor position) (Col. 2, lines 57-62; Col. 5, lines 36-39).
- With respect to claim 7, the method further comprises: waiting a fixed period of time, reapplying power to the motor, and repeating (Col. 6, lines 31-34).
- With respect to claim 13, Kardash discloses a data storage device with a motor (Fig. 1, #16), a power supply electrically coupled to the motor (Fig. 5A, +12V coupled to motor coils via drivers (#62)), and a controller measures the voltage applied to the motor and decouples power to the spindle motor is a threshold value has at least been met (power is selectively removed from motor windings) (Col. 2, lines 47-54).
- With respect to claim 14, Kardash discloses a driver control function programmed into the motor controller that disables a motor for a fixed period of time (Col. 6, lines 20-34).

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- With respect to claim 15, Kardash discloses the motor controller that decouples power when a control voltage, proportional to the motor current/voltage is at least equal to a threshold voltage (power is selectively removed from motor windings) (Col. 2, lines 47-54).
- With respect to claim 16, Kardash discloses the driver control function is enabled when a signal proportional to a current applied to the motor exceeds a predetermined threshold (peak current) (Col. 6, lines 20-34).
- With respect to claim 17, Kardash discloses the power supply coupled to the spindle motor during a start-up (Column 7, lines 34-36 implies that power has been applied for a start-up sequence prior to the On/Off sequencing) and a run sequence (Col. 2, lines 57-62; Col. 5, lines 36-39).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kardash as applied to claim 1 above, and further in view of Sakaguchi (5,767,639).
  - Kardash teaches all of the limitations of claim 1 above, but with respect to claim 4, does not disclose obtaining the control voltage by integrating across a current sensing resistor.
  - Sakaguchi discloses obtaining a control voltage for a spindle motor by integrating a voltage across a current sensing resistor (Fig. 5, #74). The motivation for using an

integrator to produce a control voltage is to transform the position velocity signal into a matched signal. This provides the advantage in that the signal can be properly amplified.

- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to produce a voltage control signal in the device of Kardash by using an integrating circuit with a current sensing resistor, thereby providing the advantage of matching the input signals, which allows them to be properly amplified and compared, as taught by Sakaguchi.

4. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsubara (5,179,494) in view of Plutowski (6,160,368).

- Matsubara discloses a method of controlling the power supply in a computer system (Fig. 2, #39) that controls a motor (Fig. 2, #28), comprising the steps of decoupling the power supply from the motor if a control voltage exceeds a predetermined voltage threshold (Col. 2, lines 51-66).
- Matsubara does not disclose the motor configured to drive a spindle.
- Plutowski discloses a motor used to drive a spindle for a disc drive [abstract]. The motivation for using a motor to drive a spindle is so the motor can be controlled automatically, in this case, also by a computer system. This provides the advantage of preventing the user from constantly monitoring spindle movement caused by the motor, since the computer system provides control.
- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention that the method for controlling a motor of Matsubara could be used to control a motor designed to operate a spindle, thereby providing the advantage of

preventing the user from constantly monitoring spindle movement, as taught by Plutowski.

***Allowable Subject Matter***

5. Claims 3, 5, and 6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

- With respect to claim 3, Kardash does not disclose a preprogrammed start-up profile that sets the voltage threshold level.
- With respect to claim 5, Kardash does not disclose a step of calibrating a predetermined voltage threshold.

***Prior Art of Record***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Plutowski (6,160,368) discloses a programmed start-up routine and using DACs, but does not disclose the routine setting a voltage threshold.
- Pulford, Jr. (6,150,789) discloses a stepper motor that cuts off power from the power supply if a voltage is above a reference voltage.
- Bleiman (3,972,535) discloses a stepper motor that is used to drive a spindle.
- El-Sadi (6,100,656) discloses a start-up profile for a motor that removes acceleration current when a predetermined *current* level is reached.
- Wang (6,148,240) discloses a method for controlling a spindle motor where input current is brought to zero by a reversed polarity signal.

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- Kim (5,910,715) discloses a current control apparatus that compares a command current value to a feedback current value.
- Weischedel (4,558,264) discloses a current control method where phase windings are selectively de-energized when their voltage value rises above a reference voltage value.

*Conclusion*


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Miller whose telephone number is 703-308-4931. The examiner can normally be reached on M-F, 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Nappi can be reached on 703-308-3370. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-3431.

Patrick Miller  
Examiner  
Art Unit 2837

pm  
December 5, 2002

  
ROBERT E. NAPPI  
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